Educator Attitudes Toward Electronic Grading Software

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Abstract

An instrument was administered to a sample of educators in two suburban school districts in the Midwestern United States. The purpose was to gauge the attitudes toward electronic grade book systems, and to ascertain the relationship between attitude and chronological age, years of teaching experience, years of computer experience, and gender. The study also compared the attitudes of teachers with those of administrators. (Keywords: electronic grading, attitudes.)

INTRODUCTION AND LITERATURE REVIEW

As a result of enormous advances in communication and computer technology, there is increased opportunity for the application of technology in today's classrooms. The foundation of modern education has been fundamentally altered by computer technology designed for educational purposes. It is this technological change in modern education that some districts are employing to enhance the quality of teaching and learning in their schools.

Studies have shown that the computer is an effective learning and teaching tool (Liaw, 2000; McFarlane, 1997). Accordingly, school district policy makers have attempted to integrate technology into their schools in various ways. Some schools have placed a priority on buying teachers laptops, while others have integrated the uses of individual laptops into their students' daily work. Another option districts are choosing that requires physical changes to classrooms, as well as philosophical changes to teaching methods, is the placement of large, expensive computer labs. These changes to schools are certainly proactive. However, many districts are still seeing no rewards for these efforts.

It is logical to assume that because technology is in place, it will have an immediate effect on the way a student learns. It could also be possible that the truly effective utilization of technology in our schools is being blocked by human factors. According to a survey by the Dell Computer Corporation, 55% of the population harbors fear of some form of technology (Hogan, 1994). A survey by Donoho (1994) found that 36% of people who use computers at their offices feel that their skill levels are inadequate. There are other opinions besides human fear and error. One might ponder the question of whether the software being purchased is adequate, or whether it fits the needs of the school. Likewise, one could think that educators are not trained or fitted to the needs of the software. According to George & Sleeth (1996), Harris (1985) coined the term "cyberphobia," an aversion or anxiety caused by technology. Other terms com-

monly used when describing people who resist technology in different ways are "computerphobia" and "technophobia" (Henry & Stone, 1997). We have to come to the realization that educators may harbor some form of fear or anxiety about using technology in their classrooms when they are the focus of students' attention (George & Sleeth, 1996). Quite possibly, this anxiety, coupled with a lack of training or a poor attitude, could hamper the effective use of technology for educational purposes.

Based on attitude research, it is apparent that a positive attitude is needed for success. Research conducted in the fields that include, but are not limited to, higher education, student learning, academics, and computers and multimedia, has shown that individuals with positive attitudes either achieve their goals more often or are more successful in the areas they are pursuing (Brush, Armstrong, Barbrow, & Ulintz, 1999; Cote & Levine, 2000; Gettys & Fowler, 1996; Hayes & Robinson, 2000; McKinnon, Nolan & Sinclair, 2000; Ruggiero, 1998).

Joel Spring (2001) outlines the primary purpose of public schools as being based on political, social, and economic purposes, along with human capital and the role of business. For this study, the primary goal of schools is seen as the ability to prepare students to lead positive and productive lives. With the numerous advances in technology, computers have now become an integral part of everyday life in the majority of professions. Therefore, they have become a necessary part in leading a "productive" life in the future. Computers cannot improve organizational performance unless they are used appropriately (Davis, Bagozzi, & Warsaw, 1989). The success of computer utilization is largely dependent upon the attitude of the faculty and students' attitudes toward computers (Liaw, 2000; Gressard & Lloyd, 1984). In 1982, Reece and Gable came to the conclusion that "One could argue that placing microcomputers in schools is a waste of time and money if proper curricular and laboratory experiences do not support the development of positive attitudes toward using the machines to facilitate learning" (p. 13).

Even as some students typically dread the thought and arrival of report cards, it is a safe assumption that teachers equally dread them, but the educational system in the United States makes it a teacher's responsibility to grade students. Few teachers enter the field of education with an actual knowledge of how much time and effort is required in the grading process (Reed, 1996). With report cards being issued every eight to nine weeks in a quarter system, or 16 to 18 weeks each semester in many schools, this is a growing workload. However, before the computer, report cards entailed much more than inputting data. It was an extremely time-consuming task, requiring the tabulations of an entire term to be done by hand, sometimes with the assistance of a calculator. Another difficulty that consumed educators' time was the combination of using a weighted formula to tabulate a student's grade. For example, although a homework grade may count as 50% of the total, quizzes may count as 10% of the total, and tests may count as 20% of the total. Even after compiling these categories, let us not forget the addition of special exams, such as semester exams, which at times may count individually as 20% of the student's total grade. Then there are those projects, presentations, and participation grades to figure. The list increases, as does the amount of time teachers have to spend simply calculating grades. This is time spent that teachers would most likely

prefer spending on their class lessons or creating and researching more exciting ways for their students to learn (Hall, Butler, Kestner, & Limbach, 1999).

Computers can provide a wonderful opportunity for school districts to create a positive impact on teachers when it comes to calculating grades. The availability of computers and the enormous amount of educational software may provide relief to those who find themselves entrenched by their grade books and calculators (Friedman, Valde, & Obermeyer, 1998; Harris, 1999). This relief comes in the form of electronic grading software (EGS) packages, which are capable of performing many different functions. With miraculous speed, they tabulate percentages based on weights entered by the educator. They also assign alpha grades (A, B, C, D, and F), which are determined at the time the software is set up. These programs also provide progress reports, grade cards, student information sheets, class averages, statistical measurements of classes, and they even have the ability to take attendance and post information on the Internet (Roblyer, Edwards, & Havrileck, 1999).

With proper training for educators and full utilization of this software, all of these tasks can be accomplished by pushing a few buttons on the computer. Once it is entered, the information stays in the program and does not have to be reentered over and over every quarter, semester, or whenever grade reports are needed. Li (1998) opined,

> Electronic grade books help you keep records up to date, and communicate grades to students, parents, and administrators more effectively. Grades can be entered numerically, with letters, or with comments for alternative assessment. Perhaps the greatest advantage of these grade books is the flexibility they allow educators in reporting student progress. They possess the ability to print class averages, individual student grades, lists of assignments, and even missing assignments. (p. 62)

This multitude of options provides the opportunity for educators to define their grade books' boundaries, while at the same time allowing for many different variables to be included in the student's total assessment. Aided by the computer, the ability to offer such a well-rounded grading process increases the opportunities through which students may experience success because of the ability the educator has to communicate information pertaining to the individual student quickly and accurately. This success assists educators with the ability to continuously motivate students based on their success or lack of achievement. As seen, the simplification of the tabulation of grades not only benefits the teacher, but the classroom environment as well.

Grading programs give educators the ability to spend more time planning instruction and less time having to do the time-consuming accounting work required when figuring grades by hand. They also have the ability to produce consistent and professional-looking documents with ease. This is not only a benefit for the teacher, but also for the school, students, and parents. Because grading program successes are primarily realized by the classroom teachers, it is important to know their opinions of these programs.

In a previous study conducted by Migliorino (2000), grading programs were discussed and teachers' comments were collected. The study examined the implications of computerized grading and whether or not parents and teachers thought it was more effective or efficient for teachers. In this study, a survey was issued to 47 certified teachers and 100 parents in a school located in the southwestern region of the United States. Seventy-four percent of the teachers felt that computerized grading was more efficient and occupied less of their planning and instructional time. Ninety-nine percent of the parents interviewed stated that they would rather receive a standardized computer generated progress report because they felt that it was more accurate.

A few of the comments collected from teachers are listed: "Electronic grading has effectively allowed us to move into the electronic era with success," "We like it because we can adapt it to our school. It can accommodate any school situation," "Saves us an enormous amount of time by taking care of our attendance and database record keeping," "Although I am a computer novice, it is even easy for me to use" (pp.13–17).

Reed (1996) found that there is a large variance of grading practices within and across departments and schools. Within his study, it was found that there was a wide variety of ways in which teachers tabulate the grades they report on report cards. Because of issues such as teachers using different methods in computing grades, the use of electronic grading programs in schools should bring some consistency into these practices. Not only does using electronic grading software promote consistency, it also assists in promoting professionalism in documentation process through schools as well. As with everything, some people will accept it and use it effectively, where others will not.

STATEMENT OF THE PROBLEM

The implementation of technology in schools is something all school districts are striving to achieve. Educators are being challenged to integrate technology into their curriculum in many different ways. One way educators are being challenged to integrate technology is through the use of electronic grading programs. The problem of this study is to determine if the attitudes of educators toward the integration of electronic grading software into schools affects a school district's ability to integrate electronic grading software. Existing research on teachers' attitudes toward electronic grading software integration was found to be nonexistent. Therefore, having this information will assist districts with the integration of electronic grading software.

PURPOSE OF THE STUDY

The purpose of this study was to determine if the attitudes of educators toward the integration of electronic grading programs into their schools was significantly related to certain variables, including age, years of teaching experience, gender, relative years of computer experience, and the influence of administrator attitudes on teachers' attitudes. The results might supply school districts with information to take into consideration before and while actively integrating electronic grading software into their district.

SIGNIFICANCE

Studies regarding the integration or implementation of technology into schools are widely available. Among these are studies focusing on attitudes of teachers, principals, counselors, and other school employees on integrating technology into schools, either to be used by students or themselves. However, literature dealing with attitudes of educators toward the integration of electronic grading technology into schools for the sole use of the educator is virtually nonexistent. Not one piece of literature was found that assessed the attitudes of educators toward the integration of electronic grading software into schools. Although literature was found discussing different types of grading software, it appears that there is a need for an assessment of the attitudes of the educators who will actually be utilizing this software.

Electronic grading software is of potentially tremendous benefit to educators. They will spend less time on the accounting aspect of educating students and more time on the actual planning and teaching of them, but if the attitude of the educator is not positive, or if educators feel uncomfortable using the software, it could possibly take away from the available planning and instructional time.

RESEARCH QUESTIONS

The following research questions were written to be examined in this study:

- Are educators' attitudes toward the integration of electronic grading software into the classroom significantly related to chronological age?
- Are educators' attitudes toward the integration of electronic grading software into the classroom significantly related to years of teaching experience?
- Are educators' attitudes toward the integration of electronic grading software into the classroom significantly related to gender?
- Are educators' attitudes toward the integration of electronic grading software into the classroom significantly related to years of computer experience?
- Are teachers' attitudes toward the integration of electronic grading software into the classroom significantly related to administrator attitudes?

METHODOLOGY

The process of integrating electronic grading programs into schools is occurring among many school districts with the hope of helping teachers calculate their grades more effectively and efficiently. In researching the literature, the author found no studies or research directly addressing the issue of educators' attitudes toward the integration of electronic grading programs into schools. Because educators are the primary users of electronic grading programs, determining their attitudes toward the software is important. The remaining variables that were selected for this study were selected because of a possible relation to the success or failure of the integration of electronic grading programs into schools. These selected independent variables were used based on the computer attitude survey created by Gessard and Lyod (1984). For further inquiry, teacher and administrator attitudes were used individually, also because of the significance one may have on the other.

Findings by Gessard and Lyod (1984) and Laiw (2000) suggest that the success of computer utilization is largely dependent on faculty and student attitudes toward computers. Rowntree (1987) and Tervilliger (1971) state that grading is the process of attaching a letter or number to work. The combination of education and the grading process leads this study in the direction of determining educators' attitudes toward the integration of electronic grading software.

Sample

The sample population examined in this study consisted of secondary schools within two public school districts located in the southwestern portion of the United States. The two districts are referred to in this study as district 1 and district 2. Both school districts are comparable in student population, demographics, number of educators at the secondary level, and that they both have begun integrating electronic grading programs within the last two years. District 1 has made the Making the Grade grading program by Jay Klein Inc. available to its teachers for the last three years and has expected it to be the primary form of grade keeping and calculation for the past two. District 2 has been using the IGPro grading program created by National Computer Systems for the past two years and has expected it to be the primary form of grade keeping and calculation for the last year. The data received from district 1 indicates that it has a secondary student population of approximately 8,336, including 490 secondary certified school teachers and 23 secondary certified school administrators. The data received from district 2 indicates that its total secondary student enrollment is approximately 10,428, including 427 secondary certified school teachers and 28 secondary certified school administrators.

Questionnaire

This questionnaire was designed to gather data to determine if the attitudes of educators toward the integration of electronic grading software into schools is significantly related to the variables of age, years of teaching experience, gender, and relative years computer experience. Additionally, the study examined if teachers' attitudes were related to administrator attitudes. An extensive literature search was conducted to improve the reliability and validity of the questionnaire. The self-designed instrument, Educators Attitudes Toward Electronic Grading Software (EATEGS) questionnaire (included in the Appendix), was a modified instrument based on questionnaires utilized in studies by other researchers. Guiding instruments were taken from studies by Condit (1995), Cresswell (1994), Gessard and Loyd (1984), Kim (2000), Laiw (2000), and Maher (1994).

These studies surveyed attitudes of school officials such as teachers, counselors, and principals toward computers and technology in general. Maher's (1994) research and survey dealt with secondary principals' computer experience, training, and attitude. He developed his questionnaire by using surveys previously conducted and validated by Delcourt and Kinzie (1991) along with the Computer Attitude Scale (CAS) developed by Gressard and Loyd (1984, 1985). These scales used Likert-type instruments consisting of approximately 30 items that presented both positively-worded and negatively-worded state-

ments. Condit (1985) surveyed counselors' attitudes toward computers, using an instrument originally developed by Zoltan and Chapanis for their study of attitudes of professional persons toward computers.

Based on this review of the research, the primary scale referenced to develop the questionnaire in this study was the CAS by Gressard and Loyd (1985). Permission to use this Likert-type scale and a copy of the CAS was obtained. This scale consisted of 30 items that presented positively-worded and negatively-worded statements of attitudes toward computers and the use of computers. The CAS was selected to be the primary model scale based on the studies reviewed, in which the researchers used or mentioned that they used the CAS in their study or created their survey or questionnaires guided by the CAS. Gressard and Loyd subjected the CAS to three validation studies which indicated that the CAS was (1) sufficiently stable, (2) had reasonable convergent validity, and (3) was sensitive to attitude changes resulting from computer instruction and experience. Therefore, the CAS appeared to be a convenient and valid measure of computer attitudes (Gressard & Loyd, 1985).

After reviewing these studies and questionnaires, a new questionnaire (EATEGS), which directly addressed the attitudes of educators toward the integration of computer software, was developed. The first five questions on the EATEGS questionnaire were taken verbatim from the CAS survey. Questions 6–10 were written to gather relative computer information and to help get the subjects into the computer mindset. The remaining 15 questions were also taken from the CAS survey, but were rewritten to directly address educators' attitudes toward electronic grading software.

The EATEGS questionnaire consists of three sections: a general information section containing five demographic questions, general questions section containing five questions, and an educators' attitude section that included 15 questions based on a four-point Likert scale: strongly disagree (1), slightly disagree (2), slightly agree (3) and strongly agree (4). Five of the questions in the educators' attitude section were reverse-coded to elicit a "reverse" response. This was done to assist in the validity of the questionnaire. The responses to the 15 attitude section questions were averaged to get a measurable attitude mean score for the attitudes of educators toward the integration of electronic grading software into the classroom.

One public school teacher and three public school principals were invited to review the items on the questionnaire. A three-point Likert scale was used to assess each item on the questionnaire. The three-point Likert scale used 1 as "Non essential," 2 as "Somewhat essential," and 3 as "Essential." The items that received a 1 were deleted, while the items that received a 2 were either revised or deleted from the questionnaire. The items that received a 3 remained as written.

The questionnaire was then given to one public school principal and three public school teachers to assess the clarity of each question. A three-point Likert scale was used to assess each item on the questionnaire. The three-point Likert scale uses 1 as "Unclear," 2 as "Needs modification," and 3 as "Clear." The items that received a 1 were removed from the questionnaire and the items that received a 2 were revised or removed from the questionnaire. The items

that received a 3 remained on the questionnaire as written. Once this process was completed, the questionnaire was considered ready to administer.

A pilot study (Migliorino, 2000) was conducted to assess the attitudes of educators toward the integration of computers into the classroom. A questionnaire was handed out to two separate groups of secondary certified educators totaling 25 educators. Of the 25 educators who received the questionnaire, 22 returned completed questionnaires. The pilot administration produced a grand mean of 3.47 for the 10 attitude variables. The overall alpha coefficient of 0.82 indicated that the instrument was reliable.

Data Analysis

Initially, each school district was individually analyzed to determine if there were intradistrict significant results, primarily because each school district implemented a different electronic grading software package. The data were also examined in the aggregate, across the two districts. These analyses were completed by using the Statistical Package for the Social Sciences (SPSS) software to determine the statistical significance of each variable, as it related to each research question. The statistical analysis procedures utilized in this study included descriptive statistics, multiple linear regression analysis, and correlational analysis.

Descriptive statistics were used to analyze all of the data. The multiple linear regression analysis that was used to determine the relationship between the dependent variable—educator attitudes, a continuous variable—and the independent variables: age, a continuous variable; years of teaching experience, a continuous variable; gender, a categorical variable; and years of computer experience, a categorical variable. Correlational analysis was conducted in determining the relationship between the two continuous variables—teacher attitude and administrator attitude. The formal analyses were supplemented with comments written by the educators responding to the survey.

RESEARCH FINDINGS

A Chronbach alpha reliability test was utilized to determine if the questions that describe the attitude of the educators were internally consistent. As seen in Table 1, the Chronbach alpha reliability test produced an overall reliability alpha score of 0.896, which was determined to be reliable.

To examine if there is a significant relationship between educators' attitudes toward the integration of electronic grading software in the classroom and the variables of chronological age, years of experience, gender, and years of computer experience, a multiple linear regression analysis was utilized. The $p<.05$ level of significance was employed. The variables were as follows:

- X1 = Chronological age (AGE)
- X2 = Years of experience (YRSEXP)
- X3 = Gender (GENDER)
- X4 = Years of computer experience (COMPEXP)
- Y = Educator attitude (TOTATT)

Table 1. Instrument Reliability

Variance Item Means				
Mean	Minimum	Maximum	Range	Max/Min
3.3815	3.0832	3.6658	.5826	1.3438

	Scale Mean if item Deleted	Scale Variance if item Deleted	Corrected Item Total Correlation	Squared Multiple Correlation	Alpha if item Deleted
ATT_1	47.2068	61.3517	.692	.5231	.8852
REVATT2	47.2874	61.7467	.5801	.4075	.8890
ATT_3	47.0572	64.2676	.5301	.3873	.8913
REVATT 4	47.2237	61.2650	.6317	.4818	.8870
REVATT 5	47.3472	60.6566	.5914	.4173	.8887
ATT_6	47.2627	61.9361	.4542	.2423	.8953
ATT_7	47.1730	62.8021	.5368	.3945	.8907
ATT_8	47.4720	60.6480	.6738	.5387	.8854
ATT_9	47.5800	61.3273	.5920	.4085	.8886
ATT_10	47.1834	65.0093	.4598	.3549	.8934
REVATT11	47.3992	61.4745	.5864	.4021	.8888
REVATT12	47.2783	61.2766	.5682	.3637	.8896
ATT_13	47.4889	61.1330	.5746	.4328	.8893
ATT_14	47.5228	61.8904	.5881	.4515	.8888
ATT_15	47.6398	61.8714	.5488	.3273	.8903

Reliability Coefficients 15 items
N = 720 *Alpha = 0.8961* *Standard item alpha = 0.8979*

X = Administrator attitude (ADMIN) Y = Teacher attitude (TEACHER).

To examine if there is a significant relationship between teachers' attitudes toward the integration of electronic grading software into the classroom and administrator attitudes, a correlation analysis was utilized. Based on the high discrepancy in the number of administrators and teachers, the data was organized by school. The 15 schools each received an administrator mean attitude score and a teacher mean attitude score. Therefore, the correlation analysis is based on the mean scores of each school, not the total responses. The $p<.05$ level of significance was employed. The variables were as follows:

- X = Administrator attitude (ADMIN)
- Y = Teacher attitude (TEACHER)

The purpose of utilizing a multiple linear regression analysis was to determine if there was any significant relationship between educators' attitudes toward the integration of electronic grading software in the classroom and chro-

nological age, years of experience, gender, and years of computer experience. The multiple linear regression analysis was conducted by entering the educator attitude (TOTATT) as the dependent variable and chronological age (AGE), years of experience (YRSEXP), gender (GENDER), and years of computer experience (COMPEXP) as the independent variables. The analysis of this study was conducted by entering all of the independent variables simultaneously.

School district 1 is comprised of data generated by 333 educators (See Table 2). Table 3 presents the results of the multiple regression analysis for District 1. Analysis of variance was used to test the overall model and determined it to be significant ($p<.05$) with an F (4,327) value of 14.850. The model determined 15.4% variance accounted for ($R^2 = .154$), with the residual being the remaining unexplained variance. Two variables were found to be statistically significant predictors of the educator attitudes, years of experience (YRSEXP) and years of computer experience (COMPEXP). The variable years of experience (YRSEXP) also displayed a negative regression coefficient.

School district 2 is comprised of data generated by 437 educators (See Table 2).

Table 4 presents the results of the multiple regression analysis for District 2. Analysis of variance was used to test the overall model and determined it to be significant ($p<.05$) with an F (4,432) value of 28.825. The model determined 21.1% variance accounted for ($R^2 = .211$), with the residual being the remaining unexplained variance.

Table 2. EATEGS Respondents Survey Data

District	Number of Schools	Male	Female	Teachers	Administrators	Total
1	7	108	225	309	24	333
2	8	106	331	416	21	437
Total	15	214	556	725	45	770

p<.05

Table 3. Summary of Multiple Linear Regression Analysis, District 1

REGRESSION COEFFICIENTS

Variables	B	Standard Error of b	Beta	F	P
GENDER	4.911E-02	.060	.042	.823	.411
AGE	6.504E-04	.004	.012	.159	.874
YRSEXP	-1.201E-02	.004	-.209	-2.718	.007*
COMPEXP	.194	.028	.353	6.885	.000*

**p<.05*

ANALYSIS OF VARIANCE

Multiple R2 = .15

R = .392

	Df	SS	MS	F	P
Regression	4	14.959	3.740	14.850	.000*
Residual	327	82.347	.252		

**p<.05*

Two variables were found to be statistically significant predictors of the educator attitudes, years of computer experience (COMPEXP) and years of experience (YRSEXP). The variable years of experience (YRSEXP) displayed a negative regression coefficient.

The total sample is comprised of data generated by 770 educators (See Table 2).

Table 5 presents the results of the multiple regression analysis for the entire sample of educators. Analysis of variance was used to test the overall model and determined it to be significant ($p<.05$) with an F (4,764) value of 43.970. The model determined 18.7% variance accounted for ($R^2 = .187$), with the residual being the remaining unexplained variance. Two variables were found to be statistically significant predictors of the educator attitudes, years of computer ex-

Table 4. Summary of Multiple Linear Regression Analysis, District 2

REGRESSION COEFFICIENTS

Variables	B	Standard Error of b	Beta	F	P
GENDER	7.292E-02	.057	.055	1.270	.205
AGE	-2.404E-03	.004	-.047	-.671	.503
YRSEXP	-1.460E-02	.004	-.259	-3.728	.000*
COMPEXP	.225	.029	.338	7.865	.000*

**p<.05*

ANALYSIS OF VARIANCE
Multiple R2 = .211
R = .459

	Df	SS	MS	F	P
Regression	4	29.951	7.488	28.825	.000*
Residual	432	112.221	.260		

**p<.05*

Table 5. Summary of Multiple Linear Regression Analysis, Total Sample

REGRESSION COEFFICIENTS

Variables	B	Standard Error of b	Beta	F	P
GENDER	5.651E-02	.041	.045	1.371	.171
AGE	-1.138E-03	.003	-.022	-.423	.672
YRSEXP	-1.382E-02	.003	-.243	-4.724	.000*
COMPEXP	.213	.020	.350	10.667	.000*

**p<.05*

ANALYSIS OF VARIANCE
Multiple R2 =.187
R = .433

	Df	SS	MS	F	P
Regression	4	45.061	11.265	43.970	.000*
Residual	764	195.739	.256		

**p<.05*

perience (COMPEXP) and years of experience (YRSEXP). The variable years of experience (YRSEXP) and chronological age (AGE) displayed a negative regression coefficient. The variable of gender showed a much more significant statistical change when the entire sample was combined.

The purpose of utilizing a correlation analysis was to determine if there was any significant relationship between teachers' attitudes toward the integration of electronic grading software into the classroom and administrator attitudes. The correlation analysis was conducted by entering the teacher's attitude (TEACHER) and administrator attitude (ADMIN). Table 6 presents the results of the correlational analyses.

District 1 revealed no statistically significant correlation (r=.361) at p<.05. District 2 revealed a statistically strong significant correlation (r=.798) at p<.05. The analysis of the entire sample revealed a statistically strong significant correlation (r=.735) at p<.05.

The multiple linear regression analysis found an overall relatively low variance accounted for in all of the aforementioned reports. This indicates that there are other factors in existence that may affect educator attitude. However, in all of

Table 6. Correlation Analysis of Teacher and Administrator Attitude

	TEACHER	ADMIN
DISTRICT 1		
Pearson Correlation	1.000	.361
Sig. (2-tailed)		.426
Sum of Squares and Cross Products	6.489E-02	2.600E-02
Covariance	1.081E-02	4.333E-03
Mean Attitude	3.3588	3.4063
SD	.1626	.4929
N	7	7
DISTRICT 2		
Pearson Correlation	1.000	.798*
Sig. (2-tailed)		.018
Sum of Squares and Cross Products	.185	.448
Covariance	2.644E-02	6.398E-02
Mean Attitude	3.3588	3.4063
SD	.1626	.4929
N	8	8
TOTAL SAMPLE		
Pearson Correlation	1.000	.735*
Sig. (2-tailed)		.002
Sum of Squares and Cross Products	.280	.539
Covariance	2.001E-02	3.849E-02
Mean Attitude	3.4007	3.4967
SD	.1414	.3704
N	15	15

*$p<.05$

the reports there was statistical significance with computer experience (COMPEXP) and a negative correlation with years of experience (YRSEXP).

The correlation analysis also found there to be an overall low variance accounted for with both variables, once again suggesting that there are other factors in existence that may affect educator attitude. The correlation analysis did produce a statistical significance in school district 2 and a strong statistical significance in the total sample.

DISCUSSION

The primary goal of schools as stated in this study is to prepare students to lead positive and productive lives outside of school. Technology in schools today is a necessity. Studies have shown that the computer is an effective learning and teaching tool (Liaw, 2000; McFarlane, 1997). School districts have been attempting to integrate technology in various ways. The process of assessing students is an everyday part of education, although at times this is a very time consuming process for educators. With the integration of electronic grading programs, the time educators actually spend on the calculation of grades can be reduced, and educators gain the ability that electronic grading programs affords to produce professional looking, informative and timely documents regarding students' grades.

An awareness of educator's attitudes toward the integration of electronic grading programs is essential. Based on research, a positive attitude toward the integration of a technological/computer applications is important for its success (Brush, Armstrong, Barbrow, & Ulintz, 1999; Cote & Levine, 2000; Gettys & Fowler, 1996; Hayes & Robinson, 2000; McKinnon, Nolan, & Sinclair, 2000; Ruggiero, 1998). According to George and Sleeth (1996) many educators have a fear of integrating any type of technology into their classrooms. Therefore, finding the factors which inhibit an educator from possessing a positive attitudes toward the integration of electronic grading programs is essential.

The chronological age of educators was not found to be significantly related to attitude for either of the two districts or the sample as a whole. The number of years of teaching experience was significantly related to attitude in both of the districts and the entire sample. Gender was not statistically significant in either district, or in the entire sample. Educator years of computer experience was significantly related to attitude in both districts, and in the entire sample. The correlational analyses were mixed. District 1 reported a $r = .361$, indicating no correlation. District 2 reported a $r = .798$, and the entire sample reported an $r = .735$.

The results of the statistical analyses have proved to be very informative. Based on this study's findings, it is apparent that the variables of age and gender have no statistical relationship to the integration of electronic grading programs. However, the variable of age did report a negative beta, implying that the higher the age, the greater the resistance to the integration of electronic grading programs. This is found to be consistent with the research. Toffler (1970) states that people are more resistant to change with increasing age. Baak et al. (1991), Henry and Stone (1997), Piña (1993), and Applebaum (1990) state that older people have less confidence and more anxiety toward technology than do younger people.

The variables of number of years of teaching experience and relative computer experience both demonstrated a significant relationship to attitude in both of the individual districts along with the entire sample. However, not only did the variable of years of teaching experience generate statistically significant results in district 1 and the entire sample, it also resulted in a negative beta, implying that more years of teaching experience is associated with greater resistance to the integration of electronic grading programs. This also appears to be consistent with previous research. Henry and Stone (1997) linked years of teaching experience with teacher age, stating that typically, teachers with more years of experience tend to have more trouble with the integration of technology. The results realized in this study regarding relative years of computer experience also maintain consistency with previous research. Koohang (1987, 1989) found that computer experience was significantly related to computer anxiety and computer liking. He also states that educators with more computer experience showed higher attitude scores than those who did not.

Teachers attitudes related to administrator attitudes were found to be significant in district 2 and when the two districts were combined. Interestingly, district 1 and district 2 did show a wide range of difference in their level of correlation (see Table 6), possibly the result of the low number of total administrators in relation to the total number of teachers. Alternatively, this finding may demonstrate that in different districts, a wide range of other variables may influence the way teachers' attitudes are related to administrator attitudes. Previous studies have indicated that if the administrators' attitudes toward technology are positive, then teachers' attitudes are more accepting and positive; no other group or person has been cited as often as the administrator as a source of influence (Carey, 1985; Ghomita, 1997; Jorde, 1985; Steward, 1990).

The educators who completed the EATEGS survey had the opportunity to write any comments or opinions they might have concerning electronic grade books. After reviewing all of the comments, it was apparent that more positive comments than negative ones were written. Many of the comments made were the same. The remainder of this section is a summary of the most common comments. Many of the educators made the statement that they felt as if they had the opportunity to receive ample training on the electronic grading program used in their district. Others felt as if they needed more training, not only on grading programs, but also with computers in general. Some examples are listed below:

- The school has provided plenty of training, but I haven't taken advantage of it.
- The school trained me, but I had to play with the program to learn it. It is a time efficient tool.
- I need more training!

Of course there were those comments made by educators who "love" and those who "hate" electronic grading programs and computers in general. Some examples are listed below:

- I love electronic grading!
- I don't feel the program is user friendly, was it made by a teacher?
- I like my old reliable hand made grade book, but this is time efficient.
- Computers are overrated.
- Electronic grade books don't scare me until I lose my data.
- Electronic grade books and computers are the best invention ever!

The majority of educators who made comments did state that electronic grading programs were very helpful—when they worked. In conclusion, a teacher from district 2 made the comment that might sum it all up when she wrote she felt as if "sometimes the tail wags the technology dog."

RECOMMENDATIONS

The use of technology in schools is inevitable, therefore finding ways in which it will not only help students be successful in the real world, but also help educators become more efficient in their bookkeeping is important. This is why many school districts are looking at implementing electronic grading programs in their districts. The successful integration depends on many different facets, but most of all its successful integration depends on the attitude of the educators actually using it on a day-to-day basis.

This study has surveyed many educators in two different school districts, attempting to determine what has made their implementation of electronic grading programs successful. Based on the results of this study the following recommendations are offered:

1. It should be a major priority of the school officials who will be attempting to integrate electronic grading programs into a school district to know who they are asking to use this program. They should consider the prospective users' age, years of teaching experience, years of computer experience, and the site level administrators' attitudes toward electronic grading programs. Knowing what you are going to face beforehand is very important; plan ahead.
2. Local school officials might consider conducting site-level surveys to address such issues as what kind of grading programs educators are currently using.
3. Local school officials might consider conducting site-level surveys addressing site-level administrators in an attempt to obtain their attitudes and opinions of electronic grading programs and what they think their individual site needs.
4. Local school officials might consider providing a representative sample group of educators with the opportunity to try out several different electronic grading programs and get site-level opinions on which grading program should be selected.
5. Further research in the area of analyzing how teachers actually figure grades in order to assist in the integration of electronic grading programs is warranted.

Contributors

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Appendix: Educators' Attitudes Toward The Integration Of Electronic Grading Software Into The Classroom (EATEGS) Questionnaire

The purpose of this questionnaire is to gather information concerning people's attitudes toward electronic grading software. It should take about five minutes to complete this survey. All responses are kept confidential. Please return the survey when completed.

General Information

Please circle or fill in the correct response that relates to you as an educator at the present time.

1. Classification: **Classroom Teacher** **Administrator** **Counselor**
2. Gender: **Male** **Female**
3. Age: _____
4. Total years experience in education _____
5. Experience with learning about or working with computers:
   0-4 years **5-10 years** **11-15 years** **16 + years**

General Questions

6. I feel comfortable/confident using a computer.	**YES**	**NO**
7. I have a computer at my home.	**YES**	**NO**
8. I have Internet access at my home.	**YES**	**NO**
9. Computers are easily accessible at my school.	**YES**	**NO**
10. I have a computer in my classroom/office.	**YES**	**NO**

Educator Attitude Scale

Below are a series of statements. There are no correct answers to these statements. They are designed to permit you to indicate the extent to which you agree or disagree with the ideas expressed. Place a checkmark in the space under the label, which is closest to your agreement or disagreement with the statement.

	Strongly Disagree	Slightly Disagree	Slightly Agree	Strongly Agree
11. Electronic grading programs do not scare me at all……				
12. Working with electronic grading programs make me very nervous…….....				
13. Electronic grading programs are worthwhile…….....				
14. I am not the type that does well with electronic grading programs……....				
15. I will do as little work with electronic grading programs as possible…..….....				
16. I feel that I am a competent electronic grading program user……				
17. I feel that there is a definite need for electronic grading software in the classroom……..				

Continued

	Strongly Disagree	Slightly Disagree	Slightly Agree	Strongly Agree
18. I feel confident using different computer programs……..				
19. When there is a problem with my electronic grading program that I can't solve I will stick with it until I have it solved…….				
20. I think it is important for me to learn to use different computer software.....				
21. It seems as if everyone else but me knows what they are doing when it comes to using electronic grading programs……				
22. I avoid using electronic grading programs as much as possible…..				
23. I do not feel intimidated by a computer program……..				
24. The challenge of learning about new technological ways of assessing students is exciting to me……..				
25. My training on electronic grading software is adequate…….				